

FILEID**PDAT

N 1

PPPPPPPP P DDDDDDDD AAAAAAA TTTTTTTTTT
PPPPPPPP D DDDDDDDD AAAAAAA TTTTTTTTTT
PP PP DD DD AA AA TT
PP PP DD DD AA AA TT
PP PP DD DD AA AA TT
PPPPPPPP DD DD AA AA TT
PPPPPPPP DD DD AA AA TT
PP DD DD AAAAAAAA TT
PP DD DD AAAAAAAA TT
PP DD DD AA AA TT
PP DDDDDDDD AA AA TT
PP DDDDDDDD AA AA TT
....
....

LL I II II SSSSSSS
LL I II II SSSSSSS
LL I I SS
LLLLLLLLLL I II II SSSSSSS
LLLLLLLLLL I II II SSSSSSS

PDI
VO

| | | |
|-----|-----|-------------------------------------|
| (1) | 82 | DECLARATIONS |
| (1) | 276 | STACKS FOR NULL AND SWAPPER PROCESS |
| (1) | 293 | NULL PROCESS HEADER AND PCB |
| (1) | 306 | SWAPPER PROCESS HEADER AND PCB |
| (1) | 322 | SYSTEM PCB |
| (1) | 331 | PCB ADDRESS VECTOR |

0000 1 .TITLE PDAT PROCESS DATA BASE
0000 2 .IDENT 'V04-000'
0000 3 :
0000 4 :*****
0000 5 :
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0000 23 :
0000 24 :
0000 25 :*****
0000 26 :
0000 27 :++
0000 28 :FACILITY: EXECUTIVE, PROCESS DATA BASE
0000 29 :
0000 30 :ABSTRACT: PDAT ALLOCATES AND INITIALIZES THE STORAGE FOR THE
0000 31 : PROCESS DATA BASE, WHICH CONTAINS THE PCB, PHD AND STACK FOR
0000 32 : THE NULL PROCESS AND SWAPPER PROCESS.
0000 33 :
0000 34 :ENVIRONMENT:
0000 35 :
0000 36 :
0000 37 :AUTHOR: RICHARD I. HUSTVEDT , CREATION DATE: 23-NOV-76
0000 38 :
0000 39 :MODIFIED BY:
0000 40 :
0000 41 : V03-007 LJK0288 Lawrence J. Kenah 9-Aug-1984
0000 42 : The AUTHPRI field is located in both the PCB and the PHD.
0000 43 :
0000 44 : V03-006 TMK0001 Todd M. Katz 24-Aug-1983
0000 45 : Create the SWAPPER with a UIC of [1,4].
0000 46 :
0000 47 : V03-005 KFH0001 Ken Henderson 20 May 1983
0000 48 : Set PCB\$V_PHDRES for NULL and SWAPPER
0000 49 :
0000 50 : V03-004 CWH1008 CW Hobbs 14-May-1983
0000 51 : Add cell SCH\$GW_LOCALNODE to hold the node bits for the
0000 52 : local cluster node.
0000 53 :
0000 54 : V03-003 ACG0319 Andrew C. Goldstein, 22-Mar-1983 21:26
0000 55 : Add resource attribute to UIC in process rights list
0000 56 :
0000 57 : V03-002 ACG0318 Andrew C. Goldstein, 8-Mar-1983 19:50

PROCESS DATA BASE

D 2

16-SEP-1984 00:55:06 VAX/VMS Macro V04-00
5-SEP-1984 03:46:05 [SYS.SRC]PDAT.MAR;1Page 2
(1)

0000 58 : Add initial rights lists to null and swapper PCB's
0000 59 :
0000 60 :
0000 61 :
0000 62 :
0000 63 :
0000 64 :
0000 65 :
0000 66 :
0000 67 :
0000 68 :
0000 69 :
0000 70 :
0000 71 :
0000 72 :
0000 73 :
0000 74 :
0000 75 :
0000 76 :
0000 77 :
0000 78 :
0000 79 :
0000 80 ;--

V03-001 CWH1001 CW Hobbs 15-Feb-1983
Add cells for last PID created and width of PIX field of PID
(SCH\$GL_PIXLAST and SCH\$GL_PIXWIDTH).
V02-005 LJK0097 Lawrence J. Kenah 3-Dec-1981
Initialize all priority fields in PCB and PHD for
both swapper and null process.
V02-004 LJK0067 Lawrence J. Kenah 15-Sep-1981
Move kernel stacks for SWAPPER and NULL so that they are
adjacent to FCP data area. This prevents the exception and
bugcheck code from overwriting valuable data when the system
is manually crashed while the null process is executing.
V02-003 SRB0029 Steve Beckhardt 17-Jul-1981
Added code to initialize lock queue header to GENPCB macro
V02-002 KT47024 Kerbey T. Altmann 30-Jun-1981
Cause SWAPPER to start up with its PCB addr in R4.

```
0000  82 .SBTTL DECLARATIONS
0000  83
0000  84 : INCLUDE FILES:
0000  85 :
0000  86 :
0000  87 $ARBDEF          ; ACCESS RIGHTS BLOCK DEFINITIONS
0000  88 $DYNDEF          ; DYNAMIC DATA STRUCTURE TYPE DEFINITIONS
0000  89 $PCBDEF          ; PROCESS CONTROL BLOCK DEFINITIONS
0000  90 $PHDDEF          ; PROCESS HEADER DEFINITIONS
0000  91 $$GNDEF GLOBAL   ; DEFINE SYSGEN VALUES
0000  92 $$STATEDEF        ; DEFINE STATE NUMBERS
0000  93
0000  94 :***** Temporary ARB definitions until SDL is fixed to expand
0000  95 :***** substructure names correctly.
0000  96 :
00000020 0000 97 ARBSR_RIGHTSLIST=32
00000030 0000 98 ARBSR_RIGHTSDESC=48
00000030 0000 99 ;***** END OF TEMPORARY DEFINITIONS
0000 100
0000 101 : EXTERNAL SYMBOLS:
0000 102 :
0000 103 :
0000003F 0000 104 SCHSC_MAXPIX==SGNSC_NPROCS-1           ; MAXIMUM PIX
0000 105
0000 106
0000 107 :
0000 108 : MACROS:
0000 109 :
0000 110 .LIST MEB
0000 111 .MACRO PHD      SYM
0000 112 .=PHD...+PHDS$'SYM
0000 113 .ENDM PHD
0000 114
0000 115 .MACRO PCB      SYM
0000 116 .=PCB...+PCBS$'SYM
0000 117 .ENDM PCB
0000 118
0000 119
0000 120 :
0000 121 : MACRO TO GENERATE PCB
0000 122 :
0000 123 .MACRO GENPCB LBL,UIC=0,PHD,PRIORITY,PID,PNAME
0000 124
0000 125 .ALIGN QUAD
0000 126 PCB...=.
0000 127 LBL=..
0000 128 .BLKB PCBSC_LENGTH
0000 129 SAV...=.           ; SAVE FOR CONTINUATION
0000 130
0000 131 PCB     L_SQFL
0000 132 .LONG   :
0000 133 .LONG   :-4
0000 134
0000 135 PCB     W_SIZE
0000 136 .WORD   PCBSC_LENGTH
0000 137
0000 138 PCB     B_TYPE
```

```

0000 139 .BYTE DYNSC_PCB
0000 140 .BYTE PCB_B_ASTEN
0000 141 .BYTE PCB_XOF
0000 142 .LONG L_ASTQFL
0000 143 .LONG :-4
0000 144 .LONG L_PHYPBCB
0000 145 .LONG PRD-^X80000000+PHDSL_PCB ; PHYSICAL PCB ADDRESS
0000 146 .LONG LU = .
0000 147 .LONG L_UIC
0000 148 .LONG UIC,1 ; UIC FOR PROCESS, RESOURCE FLAG
0000 149 .WORD W_STATE
0000 150 .WORD SCHSC_CUR ; SFT STATE TO CURRENT
0000 151 .WORD L_STS
0000 152 .WORD <TAPCB$V_RES>+<1@PCBSV_PSWAPM>+<1@PCBSV_PHDRES>
0000 153 .WORD 160 ; RESIDENT, NON-SWAPPABLE, HEADER-RESIDENT
0000 154 .WORD L_PRIB
0000 155 .WORD B_PRIB
0000 156 .WORD 3T-PRIORITY ; BASE PRIORITY
0000 157 .WORD B_AUTHPRI
0000 158 .WORD 3T-PRIORITY ; INITIAL BASE PRIORITY
0000 159 .WORD B_PRI
0000 160 .WORD 3T-PRIORITY ; CURRENT PRIORITY
0000 161 .WORD B_PRIBSAV
0000 162 .WORD 3T-PRIORITY ; SAVED BASE PRIORITY
0000 163 .WORD B_PRISAV
0000 164 .WORD 3T-PRIORITY ; SAVED CURRENT PRIORITY
0000 165 .WORD B_DIOLM
0000 166 .WORD 6 ; ALLOW REASONABLE LIMIT
0000 167 .WORD B_DIOCNT
0000 168 .WORD 6 ; ALLOW DIO
0000 169 .WORD L_PID
0000 170 .WORD PID+<1@16> ; PROCESS ID
0000 171 .WORD L_PHD
0000 172 .WORD PRD ; PROCESS HEADER
0000 173 .WORD Q_PRIV ; PROCESS PRIVILEGES
0000 174 .WORD -1,-1 ; ALL PRIVILEGES
0000 175 .WORD L_ARB ; ACCESS RIGHTS BLOCK
0000 176 .WORD ARB = .
0000 177 .WORD ARB
0000 178 .WORD ARB
0000 179 .WORD ARB
0000 180 .WORD ARB
0000 181 .WORD ARB
0000 182 .WORD ARB
0000 183 .WORD ARB
0000 184 .WORD ARB
0000 185 .WORD ARB
0000 186 .WORD ARB
0000 187 .WORD ARB
0000 188 .WORD ARB
0000 189 .WORD ARB
0000 190 .WORD ARB
0000 191 .WORD ARB
0000 192 .WORD ARB
0000 193 .WORD ARB
0000 194 .WORD ARB
0000 195 .WORD ARB

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0000 196     PCB      Q_PRIV+ARB$R_RIGHTSDESC      ; LOCAL RIGHTS DESCRIPTOR
0000 197     LR = .    .LONG    ARB$S_LOCALRIGHTS,LU
0000 198
0000 199
0000 200     PCB      Q_PRIV+ARB$R_RIGHTSLIST      ; PROCESS RIGHTS LIST
0000 201     .LONG    LR
0000 202     .LONG    EXE$GQ_RIGHTSLIST      ; LOCAL RIGHTS LIST
0000 203     .LONG    SYSTEM RIGHTS LIST
0000 204     PCB      T_LNAME      ; PROCESS NAME
0000 205     .NCHR   NCHAR,<CPNAME>      ; COUNT FOR NAME
0000 206     .BYTE   NCHAR
0000 207     .ASCII  \PNAME\      ;
0000 208
0000 209     PCB      L_LOCKQFL      ; LOCK QUEUE HEADER
0000 210     .LONG    :
0000 211     .LONG    :-4
0000 212
0000 213     .=SAV...      ; POSITION TO END OF PCB
0000 214
0000 215     .ENDM   GENPCB      ;
0000 216
0000 217     :
0000 218     : MACRO TO GENERATE PROCESS HEADER
0000 219     :
0000 220     .MACRO  GENPHD LBL,KSP=0,PC=0,P0BR=<^X80000000>,POLR=0,R4=0,PRIORITY=0
0000 221
0000 222     .ALIGN  QUAD
0000 223     PHD...=.      ; DEFINE LABEL
0000 224     LBL=.      ; GENERATE SPACE
0000 225     .BLKB   PHD$C_LENGTH      ; SAVE FOR CONTINUATION
0000 226     SAV...=.      ;
0000 227
0000 228     PHD      L_R4      ; INITIAL R4 CONTENTS
0000 229     .LONG    R4
0000 230
0000 231     PHD      L_PC      ; PROGRAM COUNTER
0000 232     .LONG    PC
0000 233
0000 234     PHD      Q_PRIVMSK      ; ALLOW EVERYTHING
0000 235     .LONG    -T,-1
0000 236
0000 237     PHD      L_POLRASL      ; P0 LENGTH REGISTER
0000 238     .LONG    POLR
0000 239
0000 240     PHD      L_P0BR      ; P0 BASE REGISTER
0000 241     .LONG    P0BR
0000 242
0000 243     PHD      L_P1BR      ; P1 BASE REGISTER
0000 244     .LONG    ^X7F802000
0000 245
0000 246     PHD      L_P1LR      ; P1 LENGTH REGISTER
0000 247     .LONG    ^X200000
0000 248
0000 249     PHD      L_KSP      ; KERNEL STACK POINTER
0000 250     .LONG    KSP
0000 251     PHD      B_ASTLVL      ; NO PENDING AST'S
0000 252     .BYTE   4

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0000 253
0000 254 PHD L FREP1VA ; FIRST AVAIL P1 VA
0000 255 .LONG ^X7FFFFE00 ; ALL FREE
0000 256
0000 257 PHD W PHVINDEX ; BALANCE SLOT INDEX
0000 258 .WORD -T ; MAKE PAGE FAULTS ILLEGAL
0000 259
0000 260 PHD B AUTHPRI ; BASE PRIORITY
0000 261 .BYTE 3T-PRIORITY
0000 262
0000 263 .=SAV... ; POSITION TO END OF PHD
0000 264 .ENDM GENPHD ;
0000 265
0000 266
0000 267 : EQUATED SYMBOLS
0000 268
00000010 0000 269 SWAP_EXT_PRIO = 16
00000010 0000 270 SYS_EXT_PRIO = 16
00000000 0000 271 NULL_EXT_PRIO = 0
00010004 0000 272 SWAP_UIC = ^X00010004
0000 273
0000 274

0000 276 .SBTTL STACKS FOR NULL AND SWAPPER PROCESS
0000 277 :
0000 278 :
0000 279 :
00000000 280 .PSECT \$SS\$000_STACKS,QUAD
00000080 0000 282 .BLKL 32 ; SHORT STACK FOR NULL PROCESS
00000080 0080 283 NULKSP:
000000A0 0080 284 SWPSK_KSTKSZ==160
00000300 0080 286 .BLKL SWPSK_KSTKSZ ; SIZE OF SWAPPER STACK
0300 287 SWPKSP:
0300 288 SWPSA_KSTK:: ; LONGER STACK FOR SWAPPER
0300 289 :
0300 290 :
00000000 291 .PSECT \$SS\$230,QUAD ; EXTERNAL NAME FOR SWAPPER STACK

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0000 293 : .SBTTL NULL PROCESS HEADER AND PCB
0000 294 :
0000 295 :
0000 296 :
0000 297 : .GENPHD NULPHD,KSP=NULKSP,PC=EXESNULLPROC,PRIORITY=NULL_EXT_PRIO
0000017C 0000 .BLKB PHD$C_LENGTH ; GENERATE SPACE
00000098 017C .=PHD...+PHD$C_R4
00000000 0098 .LONG 0
00000000 009C .=PHD...+PHD$L_PC
00000000 00C0 .LONG EXESNULLPROC ; PROGRAM COUNTER
00000000 00C4 .=PHD...+PHD$Q_PRIVMSK
00000000 00CC .LONG -1,-1
00000000 00C8 .=PHD...+PHD$L_POLRASTL
00000000 00D0 .LONG 0
00000000 00D4 .=PHD...+PHD$L_P0BR
00000000 00D8 .LONG ^X80000000
00000000 00E0 .=PHD...+PHD$L_P1BR
00000000 00E4 .LONG ^X7F802000
00000000 00E8 .=PHD...+PHD$L_P2BR
00000000 00F0 .LONG ^X200000
00000000 00F4 .=PHD...+PHD$L_KSP
00000000 00F8 .LONG NULKSP
00000000 00FC .=PHD...+PHD$B_ASTLVL
00000030 00D0 .BYTE 4 ; NO PENDING AST'S
7FFE00 0030 .=PHD...+PHD$L_FREPIVA
00000042 0034 .LONG ^X7FFFEC0 ; ALL FREE
FFFF 0042 .=PHD...+PHD$W_PHVINDEX
0000010C 0044 .=PHD...+PHD$B_AUTHPRI ; MAKE PAGE FAULTS ILLEGAL
1F 010C .=BYTE 31-NULC_EXT_PRIO ; BASE NULL EXT PRIO
0000017C 010D .=SAV... ; POSITION TO END OF PHD

017C 298 :
017C 299 :
017C 300 : .PROCESS CONTROL BLOCK FOR NULL PROCESS
017C 301 :
017C 302 : .GENPCB SCH$GL_NULLPCB,PHD=NULPHD,PID=NULPIX,-
017C 303 : PRIORITY=NULL_EXT_PRIO,PNAME=NULL
017C .ALIGN QUAD
000002A0 0180 .BLKB PCB$C_LENGTH
00000180 02A0 .=PCB...+PCB$C_SQFL
00000180 0180 .LONG .
00000180 0184 .LONG -4
0120 0188 .WORD PCB$C_LENGTH
0C 018A .BYTE DYN$C_PCB
0000018D 018B .=PCB...+PCB$B_ASTEN
0F 018D .BYTE ^XOF
00000190 018E .=PCB...+PCB$L_ASTQFL
00000190 0190 .LONG .
00000190 0194 .LONG -4
80000078 0198 .LONG NULPHD-^X80000000+PHD$L_PCB ; PHYSICAL PCB ADDRESS
0000023C 019C .=PCB...+PCB$L_UIC
00000000 023C .LONG 0,1 ; 0 FOR PROCESS, RESOURCE FLAG
000001AC 0244 .=PCB...+PCB$W_STATE
0000E 01AC .WORD SCH$C_CUR
000001A4 01AE .=PCB...+PCB$C_STS
00040011 01A4 .LONG <1@PCBSV_RES>+<1@PCBSV_PSWAPM>+<1@PCBSV_PHDRES>
000001AF 01A8 .=PCB...+PCB$B_PRIB
1F 01AF .=BYTE 31-NULC_EXT_PRIO ; BASE NULL_EXT_PRIO

```

| | | | |
|-------------|------|---------------------------------------|-------------------------------|
| 000001AB | 01B0 | .=PCB...+PCB\$B_AUTHPRI | |
| 1F | 01AB | .BYTE 31-NULC_EXT_PRIO | ; INITIAL BASE NULL_EXT_PRIO |
| 00000188 | 01AC | =PCB...+PCB\$B_PRI | |
| 1F | 018B | .BYTE 31-NULC_EXT_PRIO | ; CURRENT NULL_EXT_PRIO |
| 000001A9 | 018C | =PCB...+PCB\$B_PRIBSAV | |
| 1F | 01A9 | .BYTE 31-NULC_EXT_PRIO | ; SAVED BASE NULL_EXT_PRIO |
| 000001AB | 01AA | =PCB...+PCB\$B_PRISAV | |
| 1F | 01AB | .BYTE 31-NULC_EXT_PRIO | ; SAVED CURRENT NULL_EXT_PRIO |
| 000001C0 | 01A9 | =PCB...+PCB\$W_DIOLM | |
| 0006 | 01C0 | .WORD 6 | : ALLOW REASONABLE LIMIT |
| 000001BE | 01C2 | =PCB...+PCB\$W_DIOCNT | |
| 0006 | 01BE | .WORD 6 | |
| 000001E0 | 01C0 | =PCB...+PCB\$L_PID | : PROCESS ID |
| 00010000 | 01E0 | .LONG NULPIX<1@16> | |
| 000001EC | 01E4 | =PCB...+PCB\$L_PHD | : PROCESS HEADER |
| 00000000 | 01EC | .LONG NULPHD | |
| 00000204 | 01F0 | =PCB...+PCB\$Q_PRIV | |
| FFFFFFFFFF | F024 | .LONG -1,-1 | ; ALL PRIVILEGES |
| 00000204 | 020C | .LONG ARB | |
| 00000234 | 0210 | =PCB...+PCB\$Q_PRIV+ARB\$R_RIGHTSDESC | |
| 00000040 | 0234 | .LONG ARB\$S_LOCALRIGHTS_LU | |
| 00000224 | 023C | =PCB...+PCB\$Q_PRIV+ARB\$R_RIGHTSLIST | |
| 00000234 | 0224 | .LONG LR | : LOCAL RIGHTS LIST |
| 00000000 | 0228 | .LONG EXE\$GQ_RIGHTSLIST | : SYSTEM RIGHTS LIST |
| 000001F0 | 022C | =PCB...+PCB\$T_LNAME | |
| 04 | 01F0 | .BYTE NCHAR | |
| 4C 4C 55 4E | 01F1 | .ASCII \NULL\ | |
| 00000284 | 01F5 | =PCB...+PCB\$L_LOCKQFL | |
| 00000284 | 0284 | .LONG | |
| 00000284 | 0288 | .LONG :-4 | |
| 000002A0 | 028C | .=SAV... | : POSITION TO END OF PCB |
| | 02A0 | | |

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02A0 306 .SBTTL SWAPPER PROCESS HEADER AND PCB
02A0 307 :
02A0 308 :
02A0 309 :
02A0 310 :
02A0 311 :
02A0 312 : HEADER (PHD) FOR SWAPPER PROCESS

0000041C 02A0 GENPHD SWPPHD,KSP=SWPKSP,PC=EXESSWAPINIT,-
00000338 041C POBR=0,POLR=0,R4=$CH$GL_SWPPCB,-
00000420 0338 PRIORITY=SWAP_EXT_PRIO
00000360 033C
00000000 0360 .BLKB PHD$C LENGTH
000002A0 0364 .=PHD...+PHD$C_R4 : GENERATE SPACE
0000036C FFFFFFFF 02A0 .LONG $CH$GL_SWPPCB
00000000 036C .=PHD...+PHD$L_PC
00000368 0370 .LONG EXESSWAPINIT
00000000 0368 .=PHD...+PHD$Q_PRIVMSK : PROGRAM COUNTER
00000370 036C .LONG -1,-1
00000370 0370 .=PHD...+PHD$L_POLRASLT : ALLOW EVERYTHING
00000370 036C .LONG 0
00000370 0370 .=PHD...+PHD$L_P0BR
00000370 036C .LONG 0
00000370 0370 .=PHD...+PHD$L_P1BR : P1 LENGTH REGISTER
00000318 0378 .LONG ^X7F802000
00000300 0318 .=PHD...+PHD$L_KSP : KERNEL STACK POINTER
0000036F 031C .LONG SWPKSP
0000036F 031C .=PHD...+PHD$B_ASTLVL
0000036F 036F .BYTE 4 : NO PENDING AST'S
000002D0 0370 .=PHD...+PHD$L_FREP1VA
000002E2 02D0 .LONG ^XFFFFE00 : ALL FREE
000002E2 02D4 .=PHD...+PHD$W_PHVINDEX
000003AC 02E4 .WORD -1 : MAKE PAGE FAULTS ILLEGAL
000003AC 03AC .=PHD...+PHD$B_AUTHPRI
0000041C 03AD .BYTE 31-SWAP_EXT_PRIO : BASE SWAP EXT PRIO
0000041C 03AD .=SAV... : POSITION TO END OF PHD

041C 313 :=SAV...
041C 314 : PROCESS CONTROL BLOCK FOR SWAPPER PROCESS
041C 315 :
041C 316 : GENPCB SCH$GL_SWPPCB,PHD=SWPPHD,PID=SCH$C_SWPPIX,-
041C 317 : PRIORITY=SWAP_EXT_PRIO,PNAME=SWAPPER,-
041C 318 : UIC=SWAP_UIC
041C 0420 .ALIGN QUAD
00000540 0420 .BLKB PCB$C LENGTH
00000420 0540 .=PCB...+PCB$C_SQFL
00000420 0420 .LONG .
00000420 0424 .LONG -4
0120 0428 .WORD PCB$C_LENGTH
00000420 042A .BYTE DYN$C$PCB
0000042D 042B .=PCB...+PCB$B_ASTEN
0000042D 042D .BYTE ^XOF
00000430 042E .=PCB...+PCB$L_ASTQFL
00000430 0430 .LONG .
00000430 0434 .LONG -4
80000318 0438 .LONG SWPPHD-^X80000000+PHD$L_PCB : PHYSICAL PCB ADDRESS
000004DC 043C .=PCB...+PCB$L_UIC
0000044C 04E4 .LONG SWAP_UIC_1 : SWAP_UIC FOR PROCESS, RESO 1
0000044C 04E4 .=PCB...+PCB$W_STATE
00000444 044C .WORD SCH$C_CUR :
00000444 044E .=PCB...+PCB$C_STS
00040011 0444 .LONG <1@PCBSV_RES>+<1@PCBSV_PSWAPM>+<1@PCBSV_PHDRES>

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| | | | |
|----------------------|------|--|-------------------------------|
| 0000044F | 0448 | .=PCB...+PCBSB_PRIB | |
| OF | 044F | .BYTE 31-SWAP_EXT_PRIO | : BASE_SWAP_EXT_PRIO |
| 0000044B | 0450 | .=PCB...+PCBSB_AUTHPRI | |
| OF | 044B | .BYTE 31-SWAP_EXT_PRIO | : INITIAL_BASE_SWAP_EXT_PRIO |
| 0000042B | 044C | .=PCB...+PCBSB_PRI | |
| OF | 042B | .BYTE 31-SWAP_EXT_PRIO | : CURRENT_SWAP_EXT_PRIO |
| 00000449 | 042C | .=PCB...+PCBSB_PRIBSAV | |
| OF | 0449 | .BYTE 31-SWAP_EXT_PRIO | : SAVED_BASE_SWAP_EXT_PRIO |
| 00000448 | 044A | .=PCB...+PCBSB_PRISAV | |
| OF | 0448 | .BYTE 31-SWAP_EXT_PRIO | : SAVED_CURRENT_SWAP_EXT_PRIO |
| 00000460 | 0449 | .=PCB...+PCBSW_DIOLM | |
| 0006 | 0460 | .WORD 6 | : ALLOW_REASONABLE_LIMIT |
| 0000045E | 0462 | .=PCB...+PCBSW_DIOCNT | |
| 0006 | 045E | .WORD 6 | |
| 00000480 | 0460 | .=PCB...+PCBSL_PID | : PROCESS_ID |
| 00010001 | 0480 | .LONG SCHSC_SWPPIX+<1@16> | |
| 0000048C | 0484 | .=PCB...+PCBSL_PHD | : PROCESS_HEADER |
| 000002A0 | 048C | .LONG SWPPHD | |
| 000004A4 | 0490 | .=PCB...+PCBSQ_PRIV | : ALL_PRIVILEGES |
| FFFFFFFFFF | 04A4 | .LONG -1,-1 | |
| 000004A4 | 04AC | .LONG ARB | |
| 000004DC | 04B0 | .=PCB...+PCBSQ_PRIV+ARB\$R_RIGHTSDESC | |
| 00000040 | 04D4 | .LONG ARBSS_LOCALRIGHTS_LU | |
| 000004C4 | 04DC | .=PCB...+PCBSQ_PRIV+ARB\$R_RIGHTSLIST | |
| 000004D4 | 04C4 | .LONG LR | : LOCAL_RIGHTS_LIST |
| 00000000 | 04C8 | .LONG EXESGQ_RIGHTSLIST | : SYSTEM_RIGHTS_LIST |
| 00000490 | 04CC | .=PCB...+PCBST_LNAME | |
| 07 | 0490 | .BYTE NCHAR | |
| 52 45 50 50 41 57 53 | 0491 | .ASCII \SWAPPER\ | |
| 00000524 | 0498 | .=PCB...+PCBSL_LOCKQFL | |
| 00000524 | 0524 | .LONG : | |
| 00000524 | 0528 | .LONG :-4 | |
| 00000540 | 052C | .=SAV... | : POSITION_TO_END_OF_PCB |
| | 0540 | 319 | |
| 00000480 | 0540 | 320 SCH\$GL_SWPPID==SCH\$GL_SWPPCB+PCBSL_PID | : ADDRESS_OF_SWAPPER_PID |

```

0540 322 : .SBTTL SYSTEM PCB
0540 323 : GENERATE DUMMY PCB FOR SYSTEM PAGING
0540 324 :
0540 325 :
0540 326 :
0540 327 :
0540 328 GENPCB MMGSAL SYSPCB,PHD=0,-
00000660 0540 PID=0,PRIORITY=SYS_EXT_PRIO
00000540 0660 .BLKB PCB$C_LENGTH
00000540 0540 .=PCB...+PCB$C_SQFL
00000540 0544 .LONG .
0120 0548 .LONG :-4
0C 054A .WORD PCB$C_LENGTH
0000054D 054B .BYTE DYN$C_PCB
0F 054D .=PCB...+PCB$B_ASTEN
00000550 054E .BYTE ^XOF
00000550 0550 .=PCB...+PCB$L_ASTQFL
00000550 0554 .LONG .
00000550 0558 .LONG :-4
80000078 0558 .LONG 0-^X80000000+PHD$L_PCB ; PHYSICAL PCB ADDRESS
000005FC 055C .=PCB...+PCB$L_UIC
0000056C 0604 .LONG 0,1 ; 0 FOR PROCESS, RESOURCE FLAG
0000E 056C .=PCB...+PCB$W_STATE
00000564 056E .WORD SCH$C_CUR ;
00040011 0564 .=PCB...+PCB$C_STS
0000056F 0568 .LONG <1@PCBSV_RES>+<1@PCBSV_PSWAPM>+<1@PCBSV_PHDRES>
0F 056F .=PCB...+PCB$B_PRIB
00000568 0570 .BYTE 31-SYS_EXT_PRIO ; BASE SYS_EXT_PRIO
0F 0568 .=PCB...+PCB$B_AUTAPRI
0000054B 056C .BYTE 31-SYS_EXT_PRIO ; INITIAL BASE SYS_EXT_PRIO
0F 054B .=PCB...+PCB$B_PRI
00000569 054C .BYTE 31-SYS_EXT_PRIO ; CURRENT SYS_EXT_PRIO
0F 0569 .=PCB...+PCB$B_PRIBSAV
00000568 056A .BYTE 31-SYS_EXT_PRIO ; SAVED BASE SYS_EXT_PRIO
0F 0568 .=PCB...+PCB$B_PRI5AV
00000580 0569 .BYTE 31-SYS_EXT_PRIO ; SAVED CURRENT SYS_EXT_PRIO
0006 0580 .=PCB...+PCB$W_DIOCM ; ALLOW REASONABLE LIMIT
0000057E 0582 .WORD 6
0006 057E .=PCB...+PCB$W_DIOCNT
000005A0 0580 .WORD 6
00010000 05A0 .=PCB...+PCB$L_PID ; PROCESS ID
000005AC 05A4 .LONG 0+<1@16>
00000000 05AC .=PCB...+PCB$L_PHD ; PROCESS HEADER
000005C4 05B0 .LONG 0
0FFFFFFFFFF 05C4 .=PCB...+PCB$Q_PRIV ; ALL PRIVILEGES
000005C4 05CC .LONG ARB
000005F4 05D0 .=PCB...+PCB$Q_PRIV+ARB$R_RIGHTSDESC
00000040 05F4 .LONG ARB$S_LOCALRIGHTS_LU
000005E4 05FC .=PCB...+PCB$Q_PRIV+ARB$R_RIGHTSLIST
000005F4 05E4 .LONG LR ; LOCAL RIGHTS LIST
00000000 05E8 .LONG EXE$GQ_RIGHTSLIST ; SYSTEM RIGHTS LIST
000005B0 05EC .=PCB...+PCB$T_LNAME
00 05B0 .BYTE NCHAR
00000644 05B1 .=PCB...+PCB$L_LOCKQFL
00000644 0644 .LONG :
00000644 0648 .LONG :-4
00000660 064C .=SAV... ; POSITION TO END OF PCB

```

PDAT
V04-000

PROCESS DATA BASE
SYSTEM PCB

0660 329

8 3

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0660 331 .SBTTL PCB ADDRESS VECTOR
 0660 332 :
 0660 333 : NOTE: THE POINTER TO THE NULL PROCESS PCB MUST BE PROCESS
 0660 334 : INDEX=0. ALL INACTIVE PCB POINTER ENTRIES ARE FILLED
 0660 335 : WITH THE ADDRESS OF THE NULL PROCESS PCB TO INSURE THAT
 0660 336 : THEY POINT TO A VALID PCB.
 0660 337 : NOTE: MANY PLACES IN VMS ASSUME THAT THE SWAPPER IS IN THE
 0660 338 : HIGHEST NUMBERED "SPECIAL" SLOT. MANY SCANS OF THE
 0660 339 : PCBVEC GO FROM SCH\$C_SWPPIX+1 TO THE END.
 0660 340 :
 00000000 0660 341 NULPIX=0 : PIX FOR NULL PROCESS
 00000001 0660 342 SCH\$C_SWPPIX==1 : PIX FOR SWAPPER PROCESS
 0660 343 :
 0660 344 : VECTOR OF PROCESS CONTROL BLOCK ADDRESSES
 0660 345 :
 0660 346 : .ALIGN LONG : LONG WORD ALIGNMENT
 00000000 0660 348 SCH\$GL_PCBVEC:: : PTR TO PCB VECTOR
 0660 349 : .LONG 0 :
 0664 350 :
 0664 351 : VECTOR OF SEQUENCE NUMBERS FOR PID GENERATION
 0664 352 :
 00000000 0664 354 SCH\$GL_SEQVEC:: : PTR TO SEQUENCE NUMBER VECTOR
 0664 355 : .LONG 0 :
 0668 356 :
 0668 357 : DATA ITEMS FOR PCBVEC REFERENCES
 0668 358 :
 00000000 0668 360 SCH\$GL_MAXPIX:: : MAXIMUM PROCESS INDEX
 0668 361 : .LONG 0 :
 00000001 0668 362 SCH\$GL_PIXLAST:: : LAST PROCESS INDEX CREATED, USED
 0660 363 : .LONG SCH\$C_SWPPIX : IN ROUND ROBIN PID ALLOCATION.
 0670 364 : INIT TO SCH\$C_SWPPIX SO FIRST SEA
 0670 365 : WILL GET SLOT AFTER SWAPPER
 0670 366 :+
 0670 367 :*** The next cell contains the width of the index field in the extended (user-
 0670 368 :*** visible) PID. While it is possible to find the pcb address with:
 0670 369 :***
 0670 370 :*** EXTZV #0, G^SCH\$GL_PIXWIDTH, EPID, R0 : Get index in R0
 0670 371 :*** MOVL @G^SCH\$GL_PCBVEC[R0], R0 : R0 now has PCB adu
 0670 372 :***
 0670 373 :*** it is much safer to do
 0670 374 :***
 0670 375 :*** MOVL EPID, R0 : Extended PID to R0
 0670 376 :*** JSB EXEPID_TO_PCB : Returns PCB addr in R0
 0670 377 :***
 0670 378 :*** The format of the PID is likely to change again in future releases. Calling
 0670 379 :*** the routine offers a program much greater insurance against problems from
 0670 380 :*** future PID changes.
 0670 381 :
 00000000 0670 382 SCH\$GL_PIXWIDTH:: : WIDTH OF PROCESS INDEX FIELD IN
 0670 383 : .LONG 0 : THE PID, DETERMINED BY SYSGEN
 0674 384 :
 0674 385 :
 0000 0674 386 SCH\$GW_LOCALNODE:: : ID FOR LOCAL CLUSTER NODE, USED
 0674 387 : .WORD 0 : FOR THE NODE FIELD IN THE EPID

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V04-000

PROCESS DATA BASE
PCB ADDRESS VECTOR

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0676 388
0000 0676 389
0678 390

.WORD 0

; SPARE FOR ALIGNMENT

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V04-000

PROCESS DATA BASE
PCB ADDRESS VECTOR

0678 392

E 3

.END

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| | | | |
|--------------------|------------|----|----|
| ARB | = 000005C4 | R | 03 |
| ARB\$R_RIGHTSDESC | = 00000030 | | |
| ARB\$R_RIGHTSLIST | = 00000020 | | |
| ARB\$S_LOCALRIGHTS | = 00000040 | | |
| DYN\$C_PCB | = 0000000C | | |
| EXESG\$ RIGHTSLIST | ***** X | X | 03 |
| EXESNUCLPROC | ***** X | X | 03 |
| EXESSWAPINIT | ***** X | X | 03 |
| LR | = 000005F4 | R | 03 |
| LU | = 000005FC | R | 03 |
| MMGSAL_SYSPCB | = 00000540 | RG | 03 |
| NCHAR | = 00000000 | | |
| NULKSP | 00000080 | R | 02 |
| NULL_EXT_PRIO | = 00000000 | | |
| NULPAD | = 00000000 | R | 03 |
| NULPIX | = 00000000 | | |
| PCBSB_ASTEN | = 0000000D | | |
| PCBSB_AUTHPRI | = 00000028 | | |
| PCBSB_PRI | = 00000008 | | |
| PCBSB_PRIB | = 0000002F | | |
| PCBSB_PRIBSAV | = 00000029 | | |
| PCBSB_PRISAV | = 00000028 | | |
| PCBSB_TYPE | = 0000000A | | |
| PCBSC_LENGTH | = 00000120 | | |
| PCBSL_ARB | = 0000008C | | |
| PCBSL_ASTQFL | = 00000010 | | |
| PCBSL_LOCKQFL | = 00000104 | | |
| PCBSL_PHD | = 0000006C | | |
| PCBSL_PHYPBCB | = 00000018 | | |
| PCBSL_PID | = 00000060 | | |
| PCBSL_SQFL | = 00000000 | | |
| PCBSL_STS | = 00000024 | | |
| PCBSL_UIC | = 0000008C | | |
| PCBSQ_PRIV | = 00000084 | | |
| PCBST_LNAME | = 00000070 | | |
| PCBSV_PHDRES | = 00000012 | | |
| PCBSV_PSWAPM | = 00000004 | | |
| PCBSV_RES | = 00000000 | | |
| PCBSW_DIOCNT | = 0000003E | | |
| PCBSW_DIOLM | = 00000040 | | |
| PCBSW_SIZE | = 00000008 | | |
| PCBSW_STATE | = 0000002C | | |
| PCB... | = 00000540 | R | 03 |
| PHDSB_ASTLVL | = 000000CF | | |
| PHDSB_AUTHPRI | = 0000010C | | |
| PHDSC_LENGTH | = 0000017C | | |
| PHDSL_FREP1VA | = 00000030 | | |
| PHDSL_KSP | = 00000078 | | |
| PHDSL_POBR | = 000000C8 | | |
| PHDSL_POLRASTL | = 000000CC | | |
| PHDSL_P1BR | = 000000D0 | | |
| PHDSL_P1LR | = 000000D4 | | |
| PHDSL_PC | = 000000C0 | | |
| PHDSL_PCB | = 00000078 | | |
| PHDSL_R4 | = 00000098 | | |
| PHDSQ_PRIVMSK | = 00000000 | | |
| PHDSW_PHVINDEX | = 00000042 | | |

| | | | |
|-------------------|------------|----|----|
| PHD... | = 000002A0 | R | 03 |
| SAV... | = 00000660 | R | 03 |
| SCH\$C_CUR | = 0000000E | | |
| SCH\$C_MAXPIX | = 0000003F | G | |
| SCH\$C_SWPPIX | = 00000001 | G | |
| SCH\$GE_MAXPIX | = 00000668 | RG | 03 |
| SCH\$GL_NULLPCB | = 00000180 | RG | 03 |
| SCH\$GL_PCBVEC | = 00000660 | RG | 03 |
| SCH\$GL_FIXLAST | = 0000066C | RG | 03 |
| SCH\$GL_PIXWIDTH | = 00000670 | RG | 03 |
| SCH\$GL_SEQVEC | = 00000664 | RG | 03 |
| SCH\$GL_SWPPCB | = 00000420 | RG | 03 |
| SCH\$GL_SWPPID | = 00000480 | RG | 03 |
| SCH\$GW_LOCALNODE | = 00000674 | RG | 03 |
| SGNSC_BALSETCNT | = 00000018 | G | |
| SGNSC_DFWSCNT | = 00000064 | G | |
| SGNSC_DFWSQUOTA | = 00000078 | G | |
| SGNSC_GBLSECCNT | = 00000028 | G | |
| SGNSC_MAXGPGCNT | = 00000800 | G | |
| SGNSC_MAXPAGCNT | = 00004000 | G | |
| SGNSC_MAXPGFL | = 00001000 | G | |
| SGNSC_MAXPSTCNT | = 00000005 | G | |
| SGNSC_MAXVPGCNT | = 00002000 | G | |
| SGNSC_MAXWSCNT | = 00000400 | G | |
| SGNSC_MINWSCNT | = 0000000A | G | |
| SGNSC_NPAGEDYN | = 00006800 | G | |
| SGNSC_NPROCS | = 00000040 | G | |
| SGNSC_PAGEDYN | = 00004000 | G | |
| SGNSC_PHYPAGCNT | = 00001000 | G | |
| SGNSC_SYSDWSCNT | = 00000028 | G | |
| SGNSC_SYSVECPGS | = 00000005 | G | |
| SGNSC_SYSWSCNT | = 00000060 | G | |
| SWAP_EXT_PRIO | = 00000010 | | |
| SWAP_UIC | = 00010004 | | |
| SWPSA_KSTK | = 00000300 | RG | 02 |
| SWPSK_KSTKSZ | = 000000A0 | G | |
| SWPKSP | = 00000300 | R | 02 |
| SWPPHD | = 000002A0 | R | 03 |
| SYS_EXT_PRIO | = 00000010 | | |

PDAT Psect synopsis

PROCESS DATA BASE

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+-----+
! Psect synopsis !
+-----+

| PSECT name | Allocation | PSECT No. | Attributes | | | | | | | | | | | | | | | | |
|----------------|-------------------|-----------|------------|-----|-----|-----|-------|-------|------|-------|-------|------|--|--|--|--|--|--|--|
| ABS . | 00000000 (0.) | 00 (0.) | NOPIC USR | CON | ABS | LCL | NOSHR | NOEXE | NORD | NOWRT | NOVEC | BYTE | | | | | | | |
| \$ABSS | 00000000 (0.) | 01 (1.) | NOPIC USR | CON | ABS | LCL | NOSHR | EXE | RD | WRT | NOVEC | BYTE | | | | | | | |
| SS\$000_STACKS | 00000300 (768.) | 02 (2.) | NOPIC USR | CON | REL | LCL | NOSHR | EXE | RD | WRT | NOVEC | QUAD | | | | | | | |
| SS\$230 | 00000678 (1656.) | 03 (3.) | NOPIC USR | CON | REL | LCL | NOSHR | EXE | RD | WRT | NOVEC | QUAD | | | | | | | |

! Performance indicators !

| Phase | Page faults | CPU Time | Elapsed Time |
|------------------------|-------------|-------------|--------------|
| Initialization | 38 | 00:00:00.04 | 00:00:01.93 |
| Command processing | 113 | 00:00:00.52 | 00:00:03.75 |
| Pass 1 | 239 | 00:00:05.87 | 00:00:20.33 |
| Symbol table sort | 0 | 00:00:00.62 | 00:00:02.48 |
| Pass 2 | 118 | 00:00:01.52 | 00:00:05.15 |
| Symbol table output | 12 | 00:00:00.09 | 00:00:00.51 |
| Psect synopsis output | 2 | 00:00:00.03 | 00:00:00.03 |
| Cross-reference output | 0 | 00:00:00.00 | 00:00:00.00 |
| Assembler run totals | 524 | 00:00:08.69 | 00:00:34.18 |

The working set limit was 1350 pages.

41207 bytes (81 pages) of virtual memory were used to buffer the intermediate code.

There were 30 pages of symbol table space allocated to hold 479 non-local and 0 local symbols.

392 source lines were read in Pass 1, producing 18 object records in Pass 2.
22 pages of virtual memory were used to define 16 programs.

22 pages of virtual memory were used to define 16 macros.

-----+ ! Macro library statistics ! +-----+

Macro Library name

Macros defined

- \$255\$DUA28:[SYS.OBJ]LIB.MLB;1
- \$255\$DUA28:[SYSLIB]STARLET.MLB;2
TOTALS (all libraries)

939

524 GETS were required to define 9 macros.

There were no errors, warnings or information messages.

MACRO/LIS=LIS\$:PDAT/OBJ=OBJ\$:PDAT MSRC\$:PDAT/UPDATE=(ENH\$:PDAT)+EXECML\$/LIB

0379 AH-BT13A-SE
VAX/VMS V4.0

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